OIPE

JUN 1 0 2005

100

SOBEL EDGE (FROM H/W)

SEGMENTATION (DSP)

CENTER OF THE REFERENCE WINDOW AS TARGET CENTROID

FEATURE COMPUTATION (DSP)

FEATURE LAG FILTER & STATISTICS COMPUTATION (MP)

6 TRACKING FEATURES

(LENGTH & WIDTH TO BE USED TO DETERMINE REFERENCE WINDOW SIZE)

MEAN & SIGMA VALUES

(TO BE USED IN COAST MODE TO RE-ACQUIRE TARGET)

TARGET LOCATION 112

110 TAKE INPUT SEARCH WINDOW (DSP)

SEARCH WINDOW SIZE & LOCATION

INPUT IMAGE

FFT CORRELATION (DSP)

REFERENCE WINDOW UPDATING (DSP) 114

UPDATE RATE COEFFICIENTS

REFERENCE WINDOW SIZE

116 CORRELATION COEFFICIENT COMPUTATION (DSP)

CORRELATION COEFFICIENT

(TO BE USED FOR:
(A) CHANGE OF REFERENCE WINDOW UPDATE RATE;
(B) TRACK QUALITY FOR SWITCHING TO COAST MODE

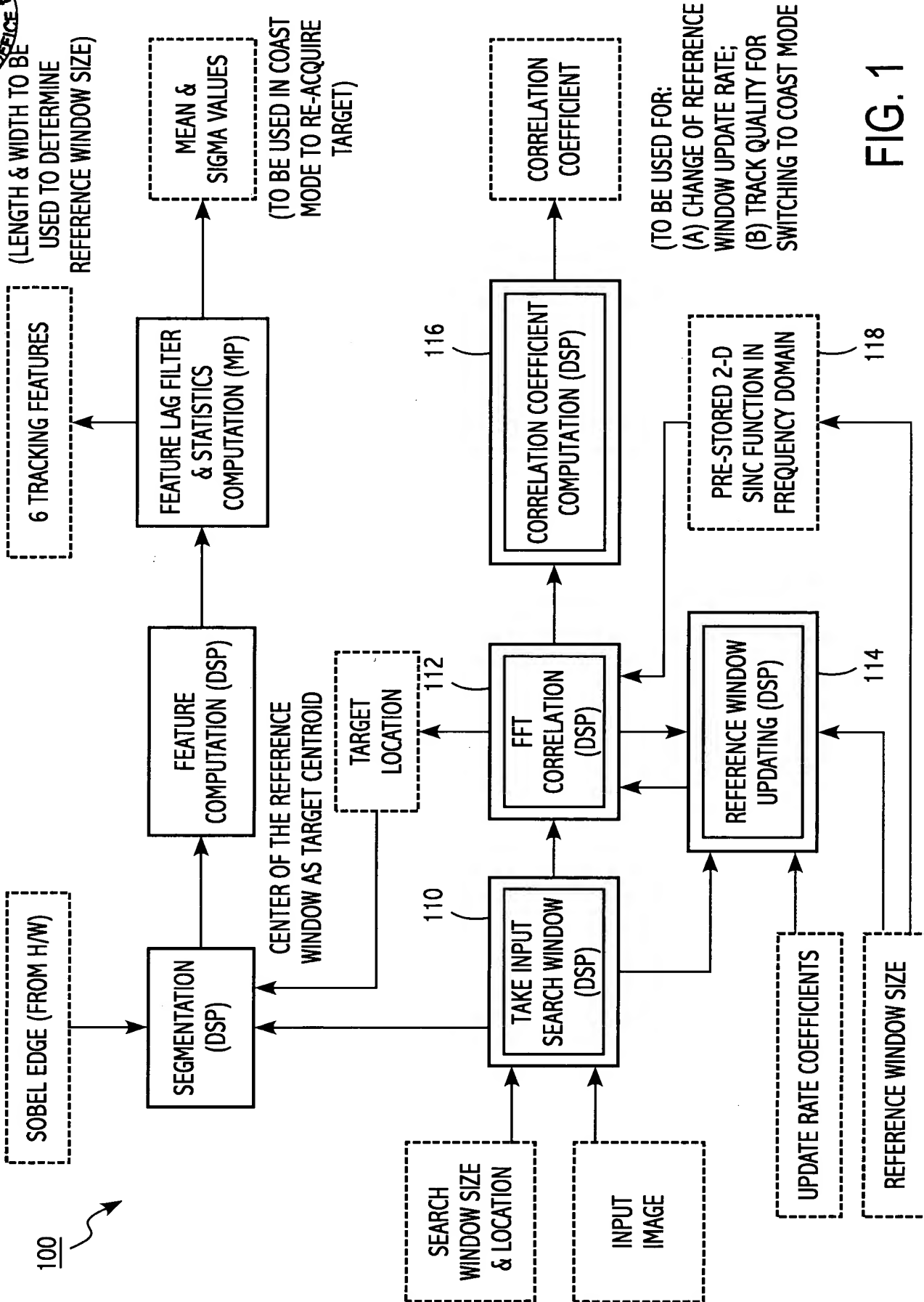PRE-STORED 2-D SINC FUNCTION IN FREQUENCY DOMAIN 118

FIG. 1

REPLACEMENT SHEET
Appln. Filing Date: December 19, 2000
Title: FAST FOURIER TRANSFORM CORRELATION TRACKING ALGORITHM WITH
BACKGROUND CORRECTION
Inventor(s): Ruey-Yuan Han
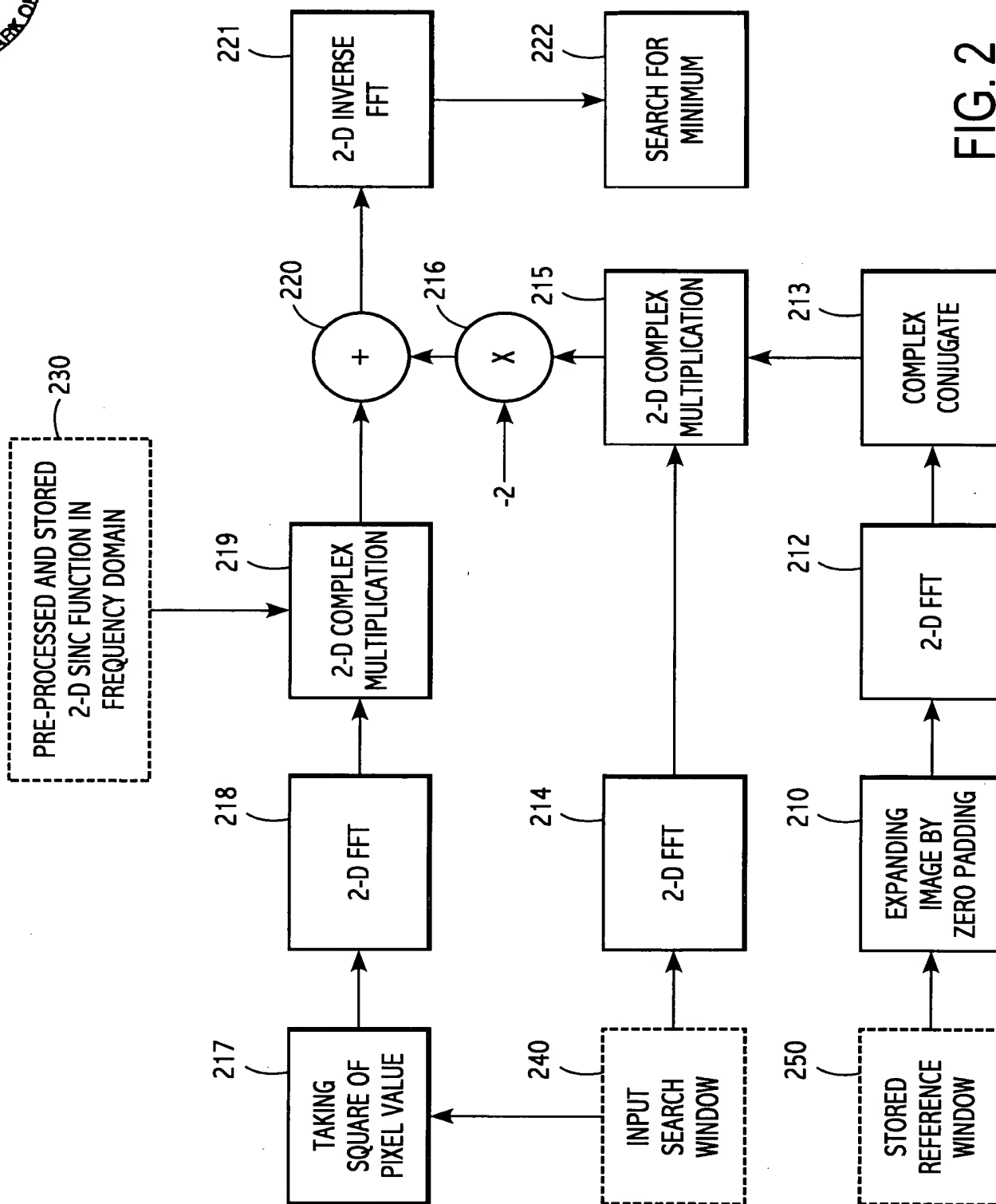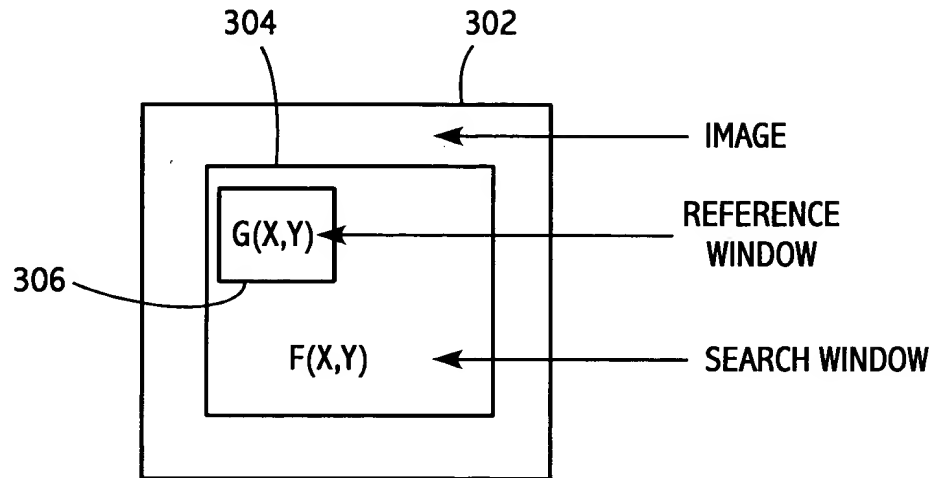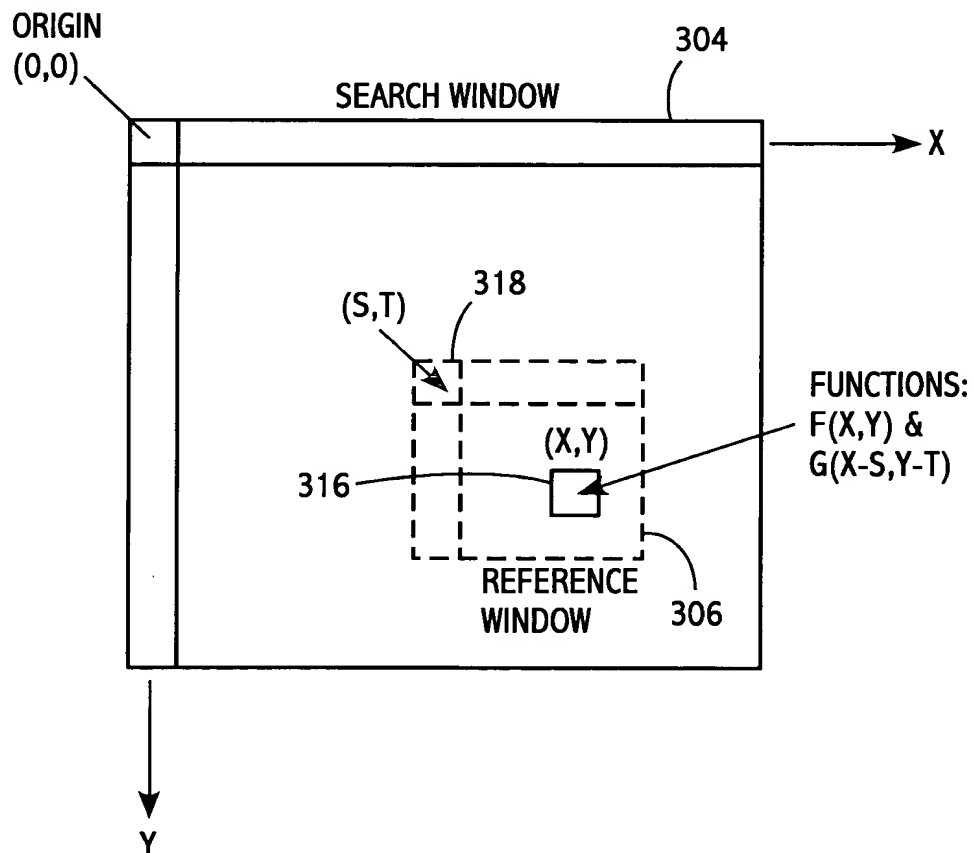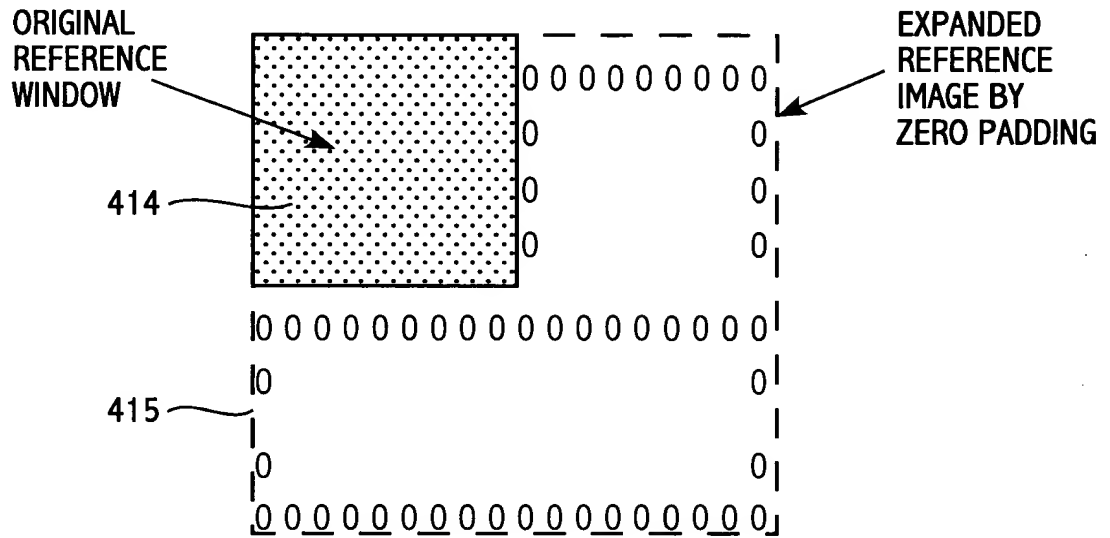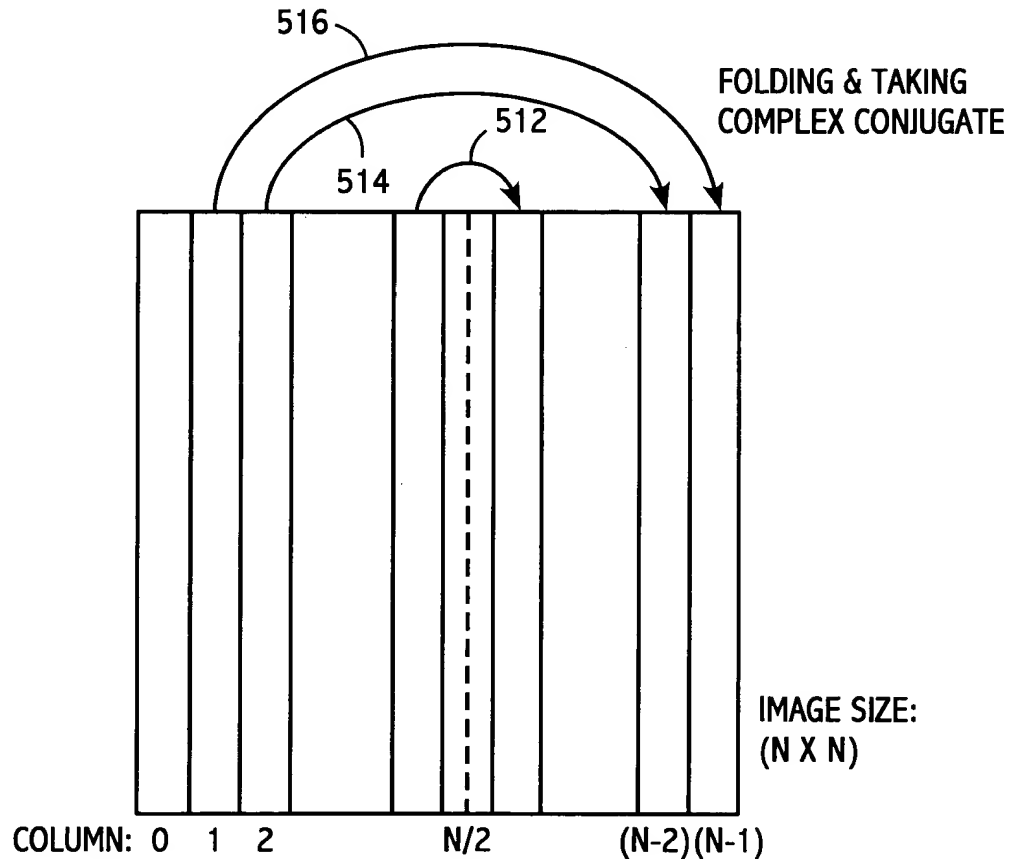Appln. No.: 09/739,002   Sheet 2of 5

FIG. 2

304   302
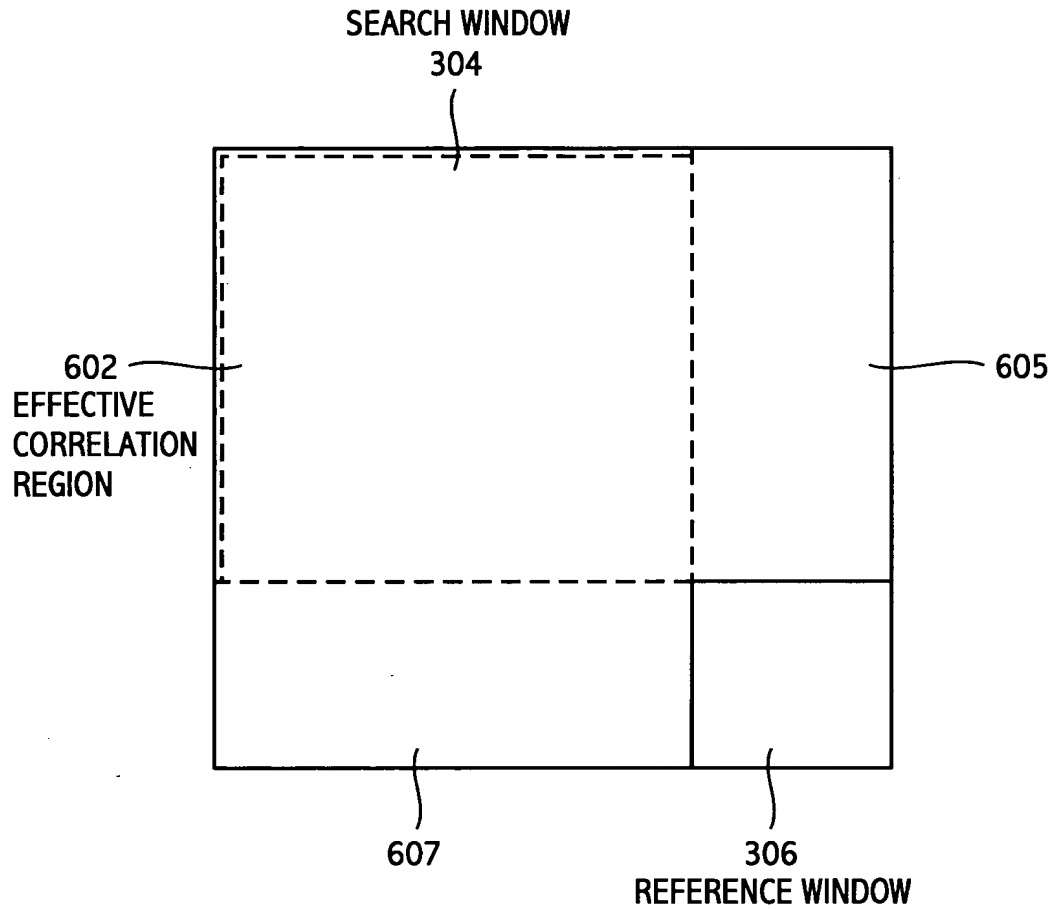
G(X,Y)

306

F(X,Y)

IMAGE

REFERENCE
WINDOW

SEARCH WINDOW

FIG. 3A

ORIGIN
(0,0)   304

SEARCH WINDOW   X

(S,T)   318

316   (X,Y)

FUNCTIONS:
F(X,Y) &
G(X-S,Y-T)

REFERENCE
WINDOW   306

Y

FIG. 3B

ORIGINAL
REFERENCE
WINDOW

EXPANDED
REFERENCE
IMAGE BY
ZERO PADDING

414

415

FIG. 4

516

512

514

FOLDING & TAKING
COMPLEX CONJUGATE

IMAGE SIZE:
(N X N)

COLUMN: 0   1   2   N/2   (N-2)(N-1)

FIG. 5

SEARCH WINDOW
304

602
EFFECTIVE
CORRELATION
REGION

605

607

306
REFERENCE WINDOW

FIG. 6